Conference

Concordia University
May 12, 13, 14, 1977

Sponsored By: Quebec Association of Mathematics Teachers, Concordia University, Ministry of Education of the Province of Quebec.

Concordia University

Concordia University, established in August 1974, joins together Sir George Williams University and Loyola of Montreal. Its name reflects the motto of the City of Montreal "Concordia salus". The University has two campuses: the Sir George Williams Campus, grouped around the Henry F. Hall Building at 1455 de Maisonneuve Boulevard West, in the heart of Montreal, and the Loyola Campus in the west end, 7141 Sherbrooke Street West — a concrete and a green campus.

The University offers undergraduate degrees in six Faculties. The Faculty of Engineering, the Faculty of Commerce and Administration and the Faculty of Fine Arts give courses on both campuses. The other Faculties are: The Sir George Williams Faculty of Arts; the Sir George Williams Faculty of Science; the Loyola Faculty of Arts and Science.

The Master's degrees awarded by Concordia University are: Master of Arts; Master of Fine Arts; Master of Science; Master of Engineering; Master of Business Administration; Master of Computer Science; Master in the Teaching of Mathematics. Doctorates are awarded in: Chemistry; Economics; Engineering; History; Humanities; Physics; Psychology; Religion. The University also offers post-graduate diploma programmes in: Art Education; Communication Arts; Early Childhood Education; Institutional Administration; Instructional Technology; the Teaching of Mathematics.

The Quebec Association of Mathematics Teachers

In the early 1960's such people as Douglas Potvin, Andrew Roy, William Watt, Oscar Purdy, and Herman Ebers helped guide their respective associations in promoting mathematics at the various levels of education.

In 1965 there were two Mathematics Associations in the English-speaking community. The Provincial Association of Mathematics Teachers was headed by Granville Miller, while the Association of Mathematics Teachers of the Province of Quebec had David Kent as its president.

In the fall of 1966, through the efforts of Messrs. Miller and Kent, these two groups were amalgamated into the present Quebec Association of Mathematics Teachers (Q.A.M.T.). The first president was Fred Bedford. During his four year tenure, he assisted in the coordination and stimulation of major efforts to improve the teaching of Mathematics.

As an affiliate of the National Council of Teachers of Mathematics (N.C.T.M.), the Q.A.M.T. continues to derive its strength from the involvement of its members.

The current president is Michael Paul.

Presidents after Fred Bedford have been Ron Paterson, Ellen Wernecke, Ray Clarke, Allan Sutherland, Sr. Michael Paul, Ed Zegray and William Macdougall.

Registration

Registration for the Conference will take place on the

Mezzanine
Hall Building
1455 de Maisonneuve Blvd., West
at the following times:

Thursday:	May 12	4:00 pm - 10:00 pm
Friday:	May 13	8:30 am - 4:00 pm
Saturday:	May 14	8:30 am - 10:00 pm

Registration Fee: $30.00
$ 5.00 (Saturday only)

Mail & Messages

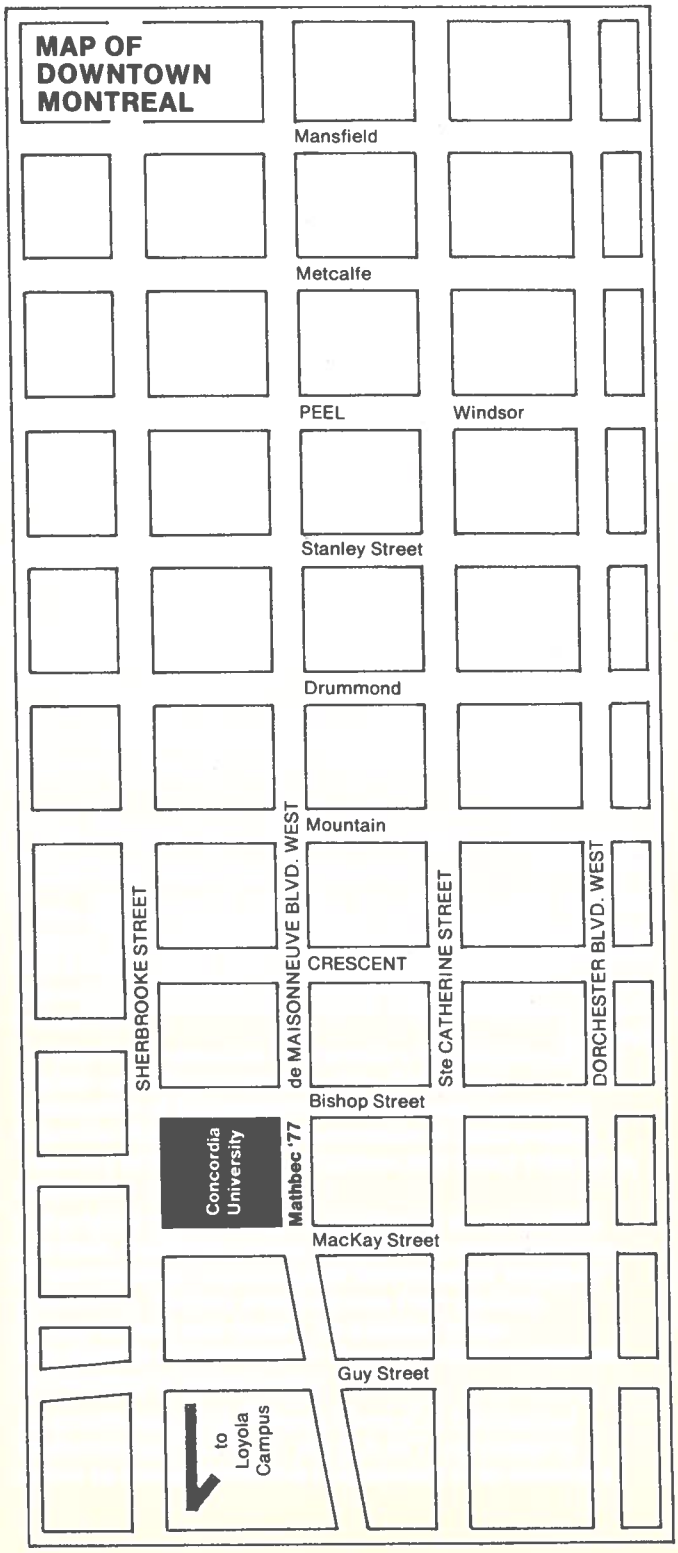
For your convenience a mail and message centre will be established at the Registration Desk during the conference.

All mail and messages should be addressed:

c/o Mathbec '77
Concordia University
1455 de Maisonneuve Blvd., W.
Montreal, P.Q.

Travel

Montreal, situated on the St. Lawrence River, can be easily reached by car, rail, bus, and air travel. During the month of May, the weather is usually sunny and warm with the temperature hovering around 70 degrees F. (You're a mathematician, so you convert it to degrees Celsius.)



Programme

Thursday, May 12

4:30-10:00 P.M. *Registration: Mezzanine*

8:00-9:00 P.M. ***H435***

Welcome: Jack Bordan, Vice-Rector, Concordia University / Sister Michael Paul, QAMT President
Speaker: Stanley J. Bezuszka, S.J., Boston College

Mathematics Literacy — A Must or a Myth?
One goal of mathematics teaching in the schools is mathematics literacy for the existing needs of the individual student. How can the needs of the student be determined? How can the goal of mathematics literacy be achieved? How can the level of mathematics literacy be raised? These questions are perennial — the answers must and do change with the times.

9:00 P.M. *Soiree: Mezzanine*

Friday, May 13

8:30 A.M. - 4:00 P.M. *Registration: Mezzanine*

9:00 - 10:15 A.M. Elementary

Diagnosis in Elementary School Mathematics ***H415***

Some procedures developed and used in identifying difficulties in children's learning of mathematics will be examined. This will be followed by a workshop in the afternoon at 3:30.
Speaker: Leroy G. Callahan, State University of New York at Buffalo
Presider: Jean Pycock, South Shore Protestant School Board

Playing Games to Learn Mathematics (Workshop) ***H429***

A workshop dealing with examples of games that have been used successfully with children to teach specific skills and concepts in mathematics (max. 35 participants).
Speaker: Stephen S. Willoughby, New York University
Presider: Mary Brian, Concordia University

Primary workshop ***H427***

Introduction to primary materials leading to concept formation and computation with numbers.
Speakers: Marilyn MacLean, Lakeshore School Board / Ken Robertson, Southshore School Board

Secondary

Survival in the Classroom *H611*
The classroom is made more difficult now due to a misunderstanding of what the "new math" is, and to the changing times. Yet, the secret of survival is still to be "a good mathematics teacher".
Speaker: John C. Egsgard, Twin Lakes Secondary School Orillia, Ontario, NCTM President
Presider: David G. Kent, Lower Canada College, Montreal

Introduction to Geometry (a 2 session workshop) *H607*
Geometry is no doubt the best vehicle in mathematics to enable students to use both intuition and imagination. Contemporary approaches to geometry rely on these two characteristics thus making the subject accessible to students of a wide range of abilities. — Geometry is for everybody, not just the selected few.
Speaker: John Del Grande, North York Board of Education, Willowdale, Ontario
Presider: Michael Miller, St. Thomas High School, Pointe-Claire

Introducing Circular Functions (Workshop) *H609*
The functions generated by the movement of a point along the perimeter of various polygons are used to introduce concepts of periodicity, amplitude and cycle. Printed materials will be available.
Speaker: E. Marian Stouffer, West Hill High School, Montreal
Presider: Edward Zegray, Montreal Catholic School Commission

CEGEP

An Algorithmic Approach to Calculus *H619*
A live sequence, convergence and the Axiom of completeness during the first lecture in calculus.
Speaker: Robert Mearns, John Abbot College
Presider: Jacqui Paull, Vanier College, St. Laurent, Que.

Teacher Ed.

Qualitative differences in mathematical thinking *H621*
The English psychologist Richard Skemp suggests that there are two modes of understanding and teaching of mathematics: instrumental understanding, knowing how, and relational understanding, knowing how and why.
Speaker: Nicolas Herscovics, Concordia University
Presider: Bertrand Morin, Quebec Ministry of Education

10:45-12:00 Noon Elementary

The Calculator Has the Answers *H415*
Here are some of the questions: Should we go back to the basics? How to make mathematics relevant? How to motivate students? How to help slow learners? How important is — ? The calculator has the answers.
Speaker: George Immerzeel, University of Northern Iowa, Cedar Falls, Iowa
Presider: Carolyn Forcillo, Kirkland School, Kirkland, Que.

"Drill 'Em Til They Drop" (Workshop) *H429*
Discussion of the importance of drill. The session will involve techniques, games and activities for drill.
Speaker: Jim Sherrill, University of British Columbia
Presider: Eileen Reid, Protestant School Board of Greater Montreal

Workshop on Math. Interest Centers *H427*
How to establish Mathematics Interest Centers at the lower elementary level.
Speaker: Felicity Reid, St. George's Elementary School, Montreal
Presider: Ann Scott, McGill University

Secondary

The Real Dilemma in Secondary Mathematics Education *H611*
A convincing body of evidence indicates that there is a significant gap between the intellectual demands of some aspects of current secondary mathematics and the intellectual maturity of large numbers of secondary school students. The speaker will share illustrations of this discrepancy (in the context of classroom topics) and suggestions of what can be done about it, drawing from ongoing research at the University of Calgary.
Speaker: Bruce Harrison, University of Calgary
Presider: Ken Climan, Windemere Elementary School, Beaconsfield, Que.

Introduction to Geometry (continuation of workshop) *H609*
Speaker: John Del Grande, North York Board of Education, Willowdale
Presider: Michael Miller, St. Thomas High School

Algebra in Secondary 3 and 4 *H607*
Workshop dealing with the difficulties encountered by students at these levels (workshop limited to 30 people).
Speaker: Peter Williams, Rosemont High School, Montreal
Presider: Art Burke, Stanstead College, Stanstead, Que.

CEGEP

How the policies of CLESEQ affect CEGEP mathematics *H621*

What is CLESEQ? It's policies have been a determining factor in the evolution of the collegial mathematics programme. The discussion will consider the evaluation of these programmes.

Speaker: François Clermont, Provincial Coordinator for Collegial Mathematics

Presider: Maurice Cohen, Concordia University

Teacher Ed. general interest panel

The Science – Math. Teaching Relationship *H619*

A panel discussion concerned with problems associated with teaching mathematically related materials. Reference will be made to Gagné-Type learning hierarchies.

Panelists: Martin Hardiman, Lower Canada College
Lorne Jacobs, Dawson College
Oscar Purdy, McGill University

Chairman: W.E. Searles, McGill University

12:00-2:00 P.M.

Luncheon: Buffet Lunch in Cafeteria *7th Floor*

Prospectives in Education in 1980

After almost two decades of innovations, educators in North America and Europe appear to be taking stock of what has and has not been accomplished, and are speculating on certain current trends that might possibly become the next developmental step in the 1980's.

Unlike the reforms of the 1960's, a prospective look into the 1980's suggests that it will be a decade of challenge to fundamental beliefs, attitudes and values that have sustained educational systems since the early 19th century.

Speaker: Maurice Bélanger, Université du Québec

Presider: Maurice Cohen, Concordia University

2:00-3:15 P.M. Elementary

Some combinatorial activities adapted for elementary school *H415*

Participants will be invited to work on selected combinatorial activities suited for elementary grades. The problem of why, where, and how to use such activities will also be discussed.

Speaker: Claude Gaulin, Laval University

Presider: Alberta Boswall, Concordia University

USMES problem solving in an elementary school (a 2 session workshop) *H429*

USMES stands for Unified Science and Mathematics for the Elementary School. This integrated programme is being taught in many American schools. The work is interdisciplinary – the challenge implicit in solving a real problem supplies the imperative for the development of a wide variety of skills. (Maximum: 50 participants)

Speaker: Peggy O'Brien, U.N. International School, N.Y.

Presider: Bill Corrigan, Quebec Ministry of Education

How to teach long division and be done with it *H427*

This is designed to be a very practical demonstration on how to teach long division so that it sticks. If time permits, and it likely will, another algorithm which is usually taught in grades 4 to 6 will be selected for demonstration.

Speaker: Ellen Wernecke, Beacon Hill School, Beaconsfield, Que.

Presider: Don Ross, Dorset Elementary School, Baie d'Urfee, Que.

Secondary

Three phases of problem solving *H611*

A presentation of some motivational and challenging problems that can be initiated by pencil and paper, extended by the use of electronic hand calculators, and expanded on the computer. These three phases will characterize the problem-solving techniques in mathematics for the next decade.

Speaker: Stanley J. Bezuszka, Boston College

Presider: Doug Potvin, Concordia University

Geometry Workshop *H609*

This workshop will focus on various approaches to the teaching of Geometry in Elementary and Junior High Schools. Workshop participants will explore a variety of geometric activities which could be used in their classrooms.

Speaker: Ray Clarke, Lakeshore School Board

Presider: Lee Adler, Concordia University

CEGEP

Mathematics Learning Centre *H621*

This presentation will describe, among other topics, how the Centre

a) alleviates classroom problems through the diagnosis, prescription, and provision of alternative learning modes
b) provides services to the public and revenues for the college that are otherwise not possible, and
c) uses systematic puzzles, strategy games, and so forth to develop logical thought processes.

Speaker: Rudolf A. Zimmer, Fanshawe College, London

Presider: Joe Guerriero, Dawson College

Teacher Ed. general interest

A discussion of three different methods of indirect reasoning *H619*

The indirect method of proof is a powerful tool in proving theorems (even the simple ones). Your students will surely appreciate this technique.
Speaker: Dominic Modafferi, McGill University
Presider: Ron Smith, Concordia University

Teacher Ed. general interest

Motivational aspects of the history of mathematics *H623*

How a knowledge of historical backgrounds of topics taught in high school helps teachers to arouse students' interest in mathematics.
Speaker: M.A. Malik, Concordia University
Presider: Mike Cassidy, Baldwin Cartier School Commission, Pointe-Claire, Que.

3:30-4:45 P.M. Elementary

Workshop on Diagnosis *H427*

Workshop will focus on remedial suggestions associated with the diagnostic procedures discussed in morning session.
Speaker: Leroy G. Callahan, SUNY at Buffalo
Presider: Jean Pycock, South Shore Protestant School Board

USMES Workshop (continued) *H429*

Speaker: Peggy O'Brien, UN International School, N.Y.
Presider: Bill Corrigan, Quebec Ministry of Education

Mathematics for Exceptional Children — the Impossible Dream? *H415*

Methods of identifying and prescriptions for teaching exceptional children. Suggestions and activities to help classroom and/or free flow teachers.
Speaker: Sister Michael Paul, Sault St. Louis School Commission
Presider: Michael Dwyer, Greenfield Park School Commission, Greenfield Park, Que.

Secondary

The Desk Top Computer — Man's Second-Best Friend *H607*

YOU and several students from Lower Canada College will get involved in many of the varied activities associated with the mini-computer.
Speaker: David G. Kent, Lower Canada College
Presider: Harry Lieberman, Dawson College

How's your E.Q.? *H609*

Here's a chance to participate in various activities and digest ideas on evaluation both of your students and of yourself which are guaranteed to improve your Evaluation Quotient.
Speakers: Michael Cassidy, Baldwin Cartier School Commission
Edward Zegray, Montreal Catholic School Commission
Presider: John Sencz, Concordia University

Low cost/No cost Activities for use in secondary one *H623*

This session will consider a collection of very inexpensive activities that have been borrowed, begged and stolen from many sources. They have been used in conjunction with a remedial mathematics program in a regular secondary one class.
Speaker: Douglas Edge, LaSalle High School
Presider: Bill Macdougall, P.S.B.G.M.

Teacher Ed. general interest

Early Childhood Mathematics: programmes, practices, problems *H619*

Can we justify what we teach in Early Childhood Mathematics? A brief survey of programmes and practices will be made, and questions fundamental to the learning and teaching of mathematics will be raised.
Speaker: Shirley McNicol, McGill University
Presider: Ellen Wernecke, Beacon Hill School, Beaconsfield, Que.

Mathematics for All? *H621*

The challenge of providing an education for all in mathematics; that equips each person for life in society; while meeting the human needs of everyone everywhere.
Speaker: David Wheeler, Concordia University
Presider: Claude Gaulin, Laval University

5:30 P.M.

Reception: Faculty Club, 7th Floor

Saturday, May 14

8:00-10:00 A.M. *Registration: Mezzanine*

9:00-10:00 A.M. Elementary

Primary Workshop (2 sessions) *H427*

Primary workshop and exchange of ideas, innovations, techniques and teaching strategies.
Speakers: Marilyn MacLean, Lakeshore School Board
Henrietta Moffat, South Shore School Board
Ken Robertson, South Shore School Board
Vera Young, Three Rivers School Board

Problems for Elementary School Teachers *H415*

Discussion of selected problems, puzzles, games, and the mathematics they generate. The discussion will also include problem solving techniques we and our students can use.
Speaker: Jim Sherrill, University of British Columbia
Presider: Eileen Reid, Protestant School Board of Greater Montreal

Programme Summary

Thursday								
8:00 pm	Opening address: Bezuszka, H-435 Auditorium							
9:00 pm	Soirée on the Mezzanine							
Friday								
8:30 am	Registration and coffee (Mezzanine)							
9:00-10:15 am	**Elem** Callahan H-415	**Elem** Willoughby H-429	**Elem** MacLean H-427	**Sec** Egsgard H-611	**Sec** DelGrande H-609	**Sec** Stouffer H-607	**T. Ed** Herscovics H-619	**CEGEP** Mearns H-621
10:45-12:00	**Elem** Immerzeel H-415	**Elem** Sherrill H-429	**Elem** Reid H-427	**Sec** Harrison H-611	**Sec** DelGrande H-609	**Sec** Williams H-607	**Gen. Int.** Searles H-619	**CEGEP** Clermont H-621
12:00-2:00 pm	Luncheon Address: Bélanger (Cafeteria - 7th floor)							
2:00-3:15 pm	**Elem** Gaulin H-415	**Elem** O'Brien H-429	**Elem** Wernecke H-427	**Sec** Bezuszka H-611	**Sec** Clarke H-609	**Gen. Int** Malik H-623	**T. Ed** Modafferi H-619	**CEGEP** Zimmer H-621
3:30-4:45 pm	**Elem** Callahan H-427	**Elem** O'Brien H-429	**Elem** Michael- Paul H-415	**Sec** Kent H-607	**Sec** Cassidy/ Zegray H-609	**Sec** Edge H-623	**T. Ed** McNicol H-619	**Gen. Int.** Wheeler H-621
5:30 pm	Reception, Faculty Club, 7th floor							
Saturday								
8:30 am	Registration and coffee (Mezzamine)							
9:00-10:00 am	**Elem** Robertson H-427	**Elem** Sherrill H-415	**Sec** Willoughby H-611	**Sec** Packer/ Abdalla H-607	**CEGEP** Edwards H-619			
10:15-11:15 am	**Elem** Robertson H-427	**Elem** Immerzeel H-429	**Sec** Harrison H-609	**Sec** Craig H-607	**CEGEP** Britton H-611			
11:30-12:30	**Elem** Fava H-415	**Elem** Immerzeel H-429	**Sec** Benoit H-619	**Sec** Craig H-607	**Gen. Int.** Byers H-611			

Secondary

Everybody Should Probably Know Probability and Statistics *H611*

Examples of times when people must understand probability and statistics for their own welfare. Several suggestions for teaching these subjects in junior and senior high school will be discussed.
Speaker: Stephen S. Willoughby, New York University
Presider: Morton Belinsky, Concordia University

"Backwards means Forward" Mathematics Remediation in the middle high school years *H607*

Remediation of mathematics requires an objective diagnosis of the specific problem. This entails stepping back from the particular problem to obtain a dispassionate view and having the student step back in his learning process to overcome the difficulty.
Speakers: Shirley Packer, The Study, Westmount
Virginia Abdalla, Riverdale High School
Presider: Santan Lobo, Montreal Catholic School Commission

CEGEP

Mathematics: A Scientific Endeavour *H619*

Mathematics is a science and the mind is its laboratory. Students have to see the symbols come alive before their eyes in order to develop a spirit of confidence based on familiar understanding.
Speaker: Gordon Edwards, Vanier College
Presider: Harold Proppe, Concordia University

10:15-11:15 A.M. Elementary

Primary Workshop (continued) *H427*

Speakers: MacLean, Moffat, Robertson, Young

"Make Your Calculator Count" *H429*
(a 2 session workshop)

Your calculator can do more than check answers. It can help you teach concepts and build skills. It can help your students learn computation skills and solve problems. It can help you solve the problems of individual differences and help you teach more in less time.

Bring your calculators and share some of my answers.

Speaker: George Immerzeel, University of Northern Iowa
Presider: Carolyn Forcillo, Kirkland School, Kirkland, Que.

Secondary

A Secondary Mathematics Clinical Interview Workshop *H609*

Participants will view videotaped clinical interviews with junior and senior high school students who will attempt to solve straight-forward problems involving ratio and proportion, money transfer, and fractions. Analysis and discussion of the interviews will focus on characterizing each student's level of mathematical development in the context of the topics involved and what this implies for a defensible teaching approach. (Workshop intended for about 30 people.)
Speaker: Bruce Harrison, University of Calgary
Presider: Ken Climan, Windermere School, Beaconsfield, Que.

A Little Black Box, Full of Goodies (2-session workshop) *H607*

The mini-calculator will be presented as a useful teaching aid which can help high school students learn and practice good mathematics. Activities will be provided for slow, regular and enriched students. Bring your own calculator or use one of ours.
Speaker: Don Craig, Three Rivers High School
Presider: Lee Adler, Concordia University

CEGEP

Artistic Representation of Finite Systems *H611*

An introduction to finite or modular arithmetic followed by a demonstration of its many applications to the creation of artistic patterns (patch-work quilt designs, line designs and curve-stitching). Material is adaptable to all grade levels.
Speaker: Jill Guadagni Britton, Dawson College
Presider: Frank Bozel, John Abbott College

11:30-12:30 P.M. Elementary

Problems with Pzazz! What Makes Some Math Problems Appealing to Children? *H415*

Children can be motivated to solve problems requiring complex skills more easily if they perceive the problems as interesting to them. Several problems with pzazz will be presented and analyzed for what makes them appealing.
Speaker: Ron Fava, Ecole Butler School, Bedford, Que.
Presider: Gill Dunn, Montreal Catholic School Commission

"Make Your Calculator Count" (continued) *H429*

Speaker: George Immerzeel, University of Northern Iowa
Presider: Carolyn Forcillo, Kirkland School, Kirkland, Que.

Secondary

Mathematics: Fact and Fancy *H619*
A collection of mathematical curiosities, problems and tricks, many of which can be integrated into math. programmes now being taught in the senior high school.
Speaker: Jack Benoit, John XXIII High School, Baldwin Cartier School Commission
Presider: Brian Kerlin. Outremont High School, Montreal

A Little Black Box Full of Goodies (continued) *H607*
Speaker: Don Craig, Three Rivers High School
Presider: Lee Adler, Concordia University

Teacher Ed. general interest

New Maths and Basics *H611*
What are "basics" in the age of T.V. and the pocket calculator? Is the learning of relevant mathematical skills incompatible with new mathematics? It is argued that, although exaggeration of the virtues of the axiomatic approach has had harmful effects on many children, an unthinking "return to basics" would cause even greater harm.
Speaker: Victor Byers, Concordia University
Presider: Fred Szabo, Concordia University

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QAMT

ANNUAL GENERAL MEETING
MAY 13th

ROOM H-420 5:00pm

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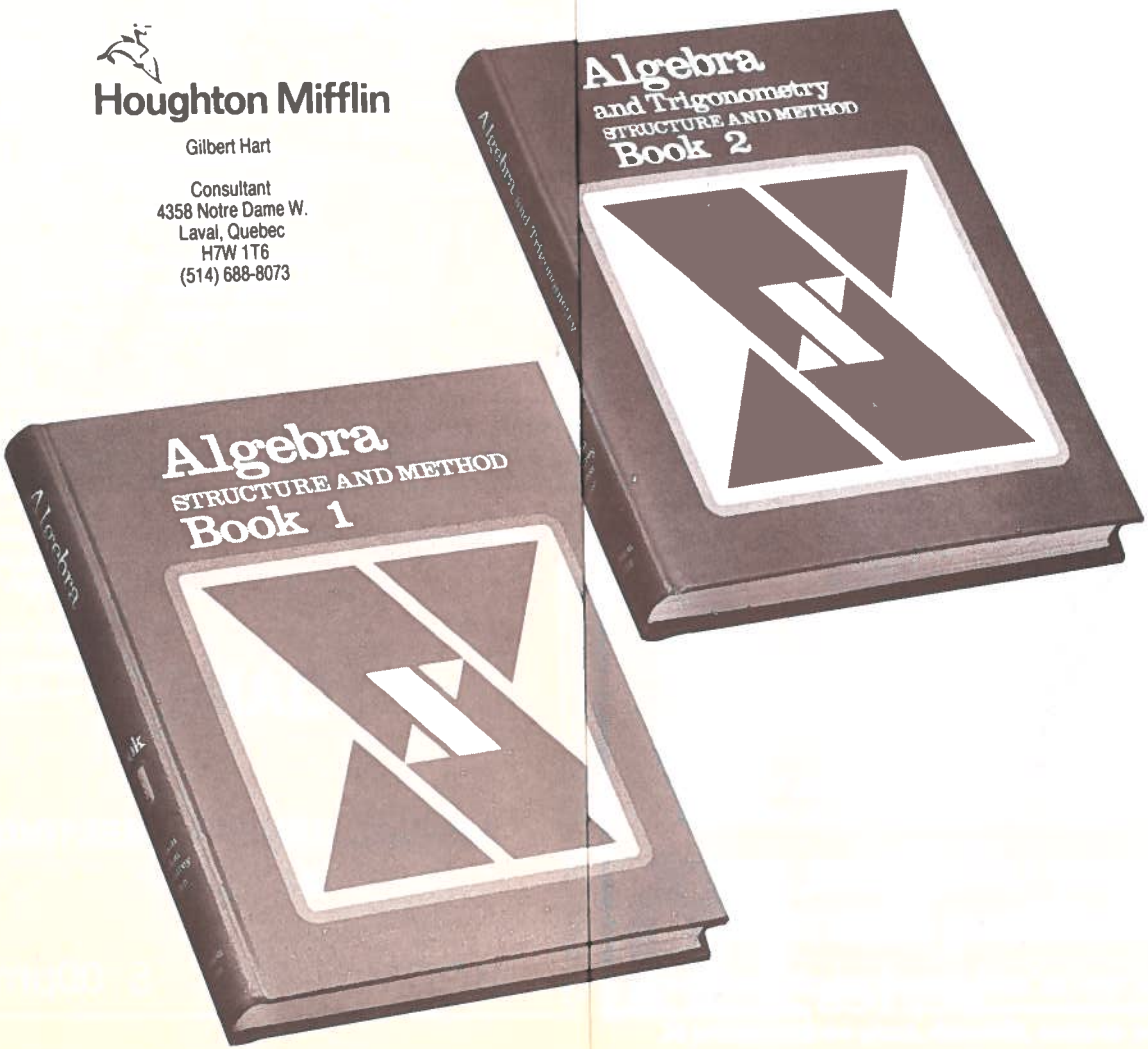

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The Executive Committee of Mathbec '77 expresses sincerest appreciation to the sponsors and their staffs, to the exhibitors, and, in particular, to Dr. John O'Brien, Rector of Concordia University.

The Executive also extends congratulations and deepest thanks to all committees and their members for their super efforts in making the conference a success.

To the guest speakers and presiders we extend a very warm 'merci beaucoup' for their participation and informative contributions.